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(RESEARCH ARTICLE)

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Development of novel real-time intranet-based food ordering system

S. V. Viraktamath, Raghavendra Kowtal^{*}, Akash Patilkulkarni, Rachit Alagundagi and Afreen Baddurkhan

Electronics and Communication Engineering Department, Shri Dharmasthala Manjunatheshwara College of Engineering & Technology, Dharwad, Karnataka, India.

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Abstract

In today's fast-paced modern world, individuals often face time constraints that prevent them from spending ample time in the canteen, waiting for their food. To address this issue, an innovative approach is proposed i.e. Intranet-based food ordering system that offers convenience to both students and faculty. This system effectively tackles the drawbacks of the traditional queueing systems. Our proposed solution acts as a user-friendly medium for ordering food effortlessly from the cafeteria it uses technologies like HTML5, CSS3, JavaScript, Node.JS, Maria DB. It revolutionizes the process of taking customer orders. Through the Intranet food ordering system, a comprehensive online menu is made available, enabling customers to conveniently place their desired orders. Furthermore, customers can easily track the status of their orders. Since this system is implemented within a specific area such as campus, the order volume remains moderate, allowing for efficient service. Payments can be made online or through a pay-on-pickup (self-service) approach. To ensure enhanced security during the ordering process, individual user accounts are maintained, with each user being assigned a unique ID and password.

Keywords: HTML; CSS; JAVASCRIPT; NODE.JS; MARIADB; VS CODE STUDIO; API

1. Introduction

Often, it is observed that crowds of people waiting in front of the cafeteria, especially during busy times like lunch hours and exams. This situation poses challenges for the cafeteria in terms of handling a large number of customers with limited manpower and time. The traditional food ordering methods, which involve paper-based or verbal-based approaches, prove to be inefficient in crowded situations. Paper-based methods rely on waiters manually recording orders and passing them to the kitchen, leading to potential errors and delays. Verbal-based methods, relying on employees' memory, also suffer from memory limitations and increase time consumption.

The proposed solution is an efficient online food ordering system for cafeterias that includes comprehensive menus with detailed food information. To access the service, users are required to create an account initially. The system offers a wide selection of food items available at the cafeteria, allowing customers to choose their desired items and make online payments through a secure payment gateway. As soon as an order is placed, the cafeteria staff receives the order information and prepares the food accordingly. Unlike the existing system, which involves manual processes and queues, the proposed system eliminates the need for paperwork by storing data in a database. This digitalization enables the cafeteria to have the food prepared in advance, eliminating the need for customers to wait in the cafeteria. The system allows for easy updates and deletions of food items, and the online platform enables the cafeteria to provide quick service to users. The data management and security aspects are closely monitored by the system administrator, ensuring data security through encryption and server databases.

^{*} Corresponding author: Raghavendra Kowtal

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To ensure compatibility with existing systems, the selected software tools and technologies are chosen carefully. The system enables easy tracking of orders, maintains customer databases, and provides a feedback mechanism. Based on user ratings, the system can recommend food items, allowing the cafeteria staff to make necessary improvements. Online payments are facilitated, and individual user accounts are maintained for secure ordering. The project's objective is to enhance customer service, improve communication between clients and servers through a user-friendly interface, and streamline the ordering process. The system design accommodates high volumes of orders, increases sales and productivity, provides detailed reporting, and saves time. The development process follows a systematic approach, incorporating relevant methodologies and conducting an extensive literature review. Social media integration allows customers to log in and register using their social media accounts, enabling them to share their views on the menu. Thorough testing ensures the quality of the system.

The introduction should be typed in Cambria with font size 10. Author can select Normal style setting from Styles of this template. The simplest way is to replace (copy-paste) the content with your own material. In this section highlight the importance of topic, making general statements about the topic and presenting an overview on current research on the subject. Your introduction should clearly identify the subject area of interest.

2. . Software Technologies and Methodology

2.1. HTML & CSS

HTML, known as Hyper-Text Markup Language, serves as the fundamental markup language for constructing web pages. Together with CSS and JavaScript, HTML forms a crucial trio of technologies utilized in the creation of web pages and user interfaces for both web and mobile applications. Web browsers are capable of parsing HTML files and rendering them into visually appealing or audible pages.

2.2. JavaScript

JavaScript is a versatile, dynamic, and interpreted programming language known for its high-level nature. It is not strongly typed and has been standardized in the ECMAScript language specification. Alongside HTML and CSS, JavaScript forms one of the key components in the creation of content worldwide. It is widely utilized on the majority of websites and is supported by modern web browsers without requiring any additional plug-ins.

2.3. Node.js

Node.js is a cross-platform and open-source runtime environment for JavaScript. It operates on the V8 engine and enables the execution of JavaScript code outside of a web browser. Node.js is specifically designed to facilitate the development of scalable network applications.

2.4. XAMPP

XAMPP is a freely available and open-source web server solution stack package created by Apache Friends. It is designed to be cross-platform and includes essential components such as the Apache HTTP Server, Maria DB database, and interpreter for scripting languages like PHP.



Figure 1 System Model [5]

The figure 1 illustrates the process involved in ordering food from customer's side.

2.5. Stages of Advancement

The mentioned steps were followed during implementation:

- Creating the user interface
- Creating a middleware and routes
- Mapping back-end to front-end
- Deploying the website

The system is portioned in two main logical components:

- Food Ordering System- enables customers to quickly place their orders and provide essential information.
- Menu Control System- empowers the restaurant to manage available food items for customer ordering.

2.6. Project function

The Online Food Order System application is designed to offer the following essential functions:

Web Ordering System Module:

This module empowers customers to effortlessly place their orders and provide all the necessary details. The system ensures that restaurant customers can access the following functionalities:

- Account Creation: Users can create their personal accounts with ease.
- Account Management: Customers have the ability to manage and update their account information.
- Secure Login: A reliable and secure login mechanism allows customers to access their accounts.
- Menu Navigation: Customers can easily navigate through the restaurant's menu to explore available options.
- Item Selection: Users can select desired items from the menu based on their preferences.
- Order Customization: Customers can customize their orders by adding or removing items as needed.
- Order Review: A comprehensive overview of the current order enables customers to review their selections.
- Item Removal: Customers have the option to remove individual items or clear their entire order.
- Payment Information: Customers can securely provide their payment details for seamless transactions.
- Order Placement: A streamlined process allows customers to place their orders with confidence.
- Order Confirmation: Customers receive a confirmation message containing a unique order number.
- Order History: Users can view their previously placed orders for reference and tracking purposes.

2.7. Data Flow Diagram (DFD)

2.7.1. DFD for Customer

The figure 2.1 illustrates the processes for customers that can observe, login and then order from the menu. There are four processes involved in this application for a customer.

In Process 1, when a visitor requests the menus page, the system queries the menu table in the database to retrieve the available menus. The system then presents the menu list to the visitor. If the visitor wishes to add a menu to their shopping cart, they can click the "Add to Menu" button.

In Process 2, the system checks if the user is logged in. If the user is not logged in, the system redirects them to the login page and requests them to log in. Once the user provides their credentials, the system verifies the credentials by comparing them against the user database. In Process 3, if the user's credentials match the credentials stored in the User table of the database, the system adds the selected menu to the Cart table and redirects the user to the cart page. In Process 4, when the user confirms their order, the order details are saved in the Order table of the database.



Figure 2 Data-Flow-Diagram of Customers [6]

2.8. Data Flow Diagram for admin

The figure 3 illustrates the processes for admin to manipulate the Menus table in the database. There are five processes involved in this application for admin functionalities.

As shown in Figure 3 Check Admin Credentials represents the admin login to the system. When the admin provides their credentials and sends a login request to the system, the system verifies the credentials by checking them against the admins table in the database. Upon successful verification, the admin is granted access to the system.

As shown in Figure 3 Get All Menu Information represents the retrieval of the available menu list for the admin. The system retrieves the menu data from the database and presents it to the admin for viewing and further actions.

As shown in Figure 3 Update Menu represents the update process for the menu. The admin can make changes to the menu details, such as updating the name, price, or description of a menu item. These modifications are reflected in the Menus table of the database



Figure 3 Data-Flow-Diagram of admin [6]

Process 4 showcases the deletion of a menu item. The admin can select a menu item from the list and initiate its removal from the Menus table. The system updates the database accordingly to reflect the deletion.

As shown in Figure 3 Add Menu represent the addition process of a new menu item. The admin can provide the necessary details for a new menu item, such as its name, price, and description. Upon submission, the system adds the new menu item to the Menus table in the database, making it available for customers to view and order.

3. Results and discussion

We obtained the following results by using the technologies like HTML5, CSS3, JavaScript, Node.JS, Maria DB

There are 4 parts in below shown results

- Registration Page
- SignUp Page
- Index page
- Service Box

Each of these are discussed Below

3.1. Registration Page

The Fig 5 shows Registration Page having a background image and a content box. The border radius of mentioned page is 23px. The content box is partitioned into 3 namely parts usernames, password and create and account. The font family taken here is "Roboto", sans-serif and font size are 14px. The background image taken is "SDM college of Engineering and Technology, Dharwad". The colour of the content box is white(hex-#00FFFF). The colour of the "Login" button is Steel Blue (Hex- #544caf). This page acts as a welcome page.



Figure 4 Registration Page

3.2. Sign-Up Page



Figure 5 Sign-up page

The Fig 5 shows Signup page has a content box divided into Name, Phone number, USN, Email, Password. The font family Arial, Helvetica, sans-serif, and font size is 24px. The colour of the background is whit and the colour of the "Register" button in Green (Hex- #04AA6D). This page is for the customers to register themselves to enter the main Index page. Once user register themselves, they may enter the website just by using username and password.

3.3. Index Page

The Fig 6 shows Index Page is the main hub of the website, enabling users to place orders and contact administrators if needed. It features a user-friendly design, accessible to all users. The search bar allows for direct dish searches, streamlining the ordering-process.



Figure 6 Index Page

3.4. Service Box

The Fig 7 shows box contains the main menu. All the dishes available to order from the cafeteria is displayed in a neat format. Each dish is placed in its own section according to the cuisine it belongs to with information about the dish and its price. The menu will be constantly updated by the restaurant admin regarding the new dishes and prices.



Figure 7 Service Box

4. Conclusion

"Real-Time Intranet Based Food Ordering System" aims to provide a convenient and efficient solution for food ordering in the college cafeteria. The traditional queueing system is replaced with an online platform that allows students and faculty to order food hassle-free.

The project addresses the problem of long waiting times and manual processes involved in food ordering. By implementing the proposed system, customers can easily browse the online menu, select their desired items The cafeteria staff receives the order details instantly and prepares the food in advance, eliminating the need for customers to wait in line. The system also allows customers to track the status of their orders.

The benefits of the proposed system include reduced waiting times, improved customer satisfaction, streamlined food ordering process, and enhanced efficiency for the cafeteria staff.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to disclosed.

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